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Sirs,

The attached spreadsheet shows my collection of Comcast cable signal strength, error rate and noise ratios at my home in Arden Hills, Minnesota. I have collected data at two different times, slightly over one year apart on 112 different cable channels. My collection process methodology is described at the end of this document.

The first collection, on 28 December 2011, was to document the problems I was seeing with my cable service. A number of channels, including premium channels, were almost unwatchable due to noise, pixelation, tiling and artifacts of data errors. Given the compression algorithm in use combined with a low key frame rate, the video would often go almost completely silver for seconds before clearing up.

I provided the data I collected along with videos of several cable channels to the North Suburban Cable Commission (NSCC), which is the local franchising authority. At that time, the NSCC was just engaging in a franchise renewal process and was in the midst of performing a technical analysis of the cable network as part of that renewal process.

As a result of my complaint, and with assistance from NSCC, Comcast worked on the cable network in my area and reportedly made changes to improve the signal for cable television.

After Comcast's adjustments, my cable television service was noticeably improved. I still detected some video problems on certain channels. Unfortunately, I did not perform an additional data collection process immediately following the cable system adjustments.

Over time, I have started to see more and more artifacts creep back into the cable service on more channels. And so, on 24 January 2013, I performed another data collection process, not only recording the normal and peak signal strength values, but also recording the Signal to Noise Ratio (SNR) decibel (dB) value, and the number of reported data errors, both corrected and uncorrected. Given the number of channels for which I was collecting data and the manual nature of my collection process, I could only sample each channel for 60 to 90 seconds.

My spreadsheet shows the values I have recorded and also the difference from the first collection process in normal and peak strength on each of the channels. The television, TiVo, and cabling are the same in the second collection process as was used in the first process. Given a maximum signal strength of 100, the initial data collection revealed 16 of 112 channels with a normal and peak signal strength below 80. A signal strength of 80 is considered 'poor' quality. The minimum signal sgtrength seen on a channel was 62 and the average normal strength was 88.

One year after the adjustment to the cable system, there are only 3 of 112 channels with a normal signal strength below 80 and all of these would peak over 80. The average normal signal strength rose to 97 and the average peak strength is 99.

The columns showing the signal strength difference from the initial to the subsequent collection reveals that the a few channels are actually delivering a lower signal strength now, than a year ago. However, 41 channels, over one-third, show a signal strength improvement of 10 or more and 4 show an improvement of over 30 in normal reported strength.

It is interesting to note that the signal strength and error rates appear to depend upon the target audience for a channel. Additional study would be needed, but it appears that sports and on-demand channels receive the strongest signals and lowest errors rates, while channels targeted at children, families, or minorities exhibit lower signal strengths and higher error rates.

I believe that without hard numbers on the problems I was seeing on my cable service, Comcast would not have made the type of corrections to their cable network that were performed. I also believe that periodic collection and analysis of signal strength and error rates should be undertaken to ensure that all cable channels are treated equally and that there is no degradation in the quality of the cable service being paid for.

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Method for Collecting Cable Signal Strength and Error Rate Values

I use a TiVo Series 3 HD DVR to analyze my cable channels. My TiVo uses a Cable Card with multiple tuners, supplied and installed by Comcast, to connect to the cable network. To perform an analysis of a channel, I follow these steps for each channel:

1. Tune the TiVo to the channel to be analyzed;
2. Press the TiVo button and select:
    1. **Messages & Settings**
    2. **Account & System Information**
    3. **DVR Diagnostics**
3. Record the channel number and observe the signal strength for at least 60 to record the 'normal' value and the 'peak' value.

4. After at least 60 seconds record the number of uncorrected and corrected errors and the time expired.